

**REMARKS**

The Applicants respectfully request reconsideration of the present Application in view of the foregoing amendments and in view of the reasons that follow.

This amendment adds, changes and/or deletes claims in this Application. A detailed listing of claims that are, or were, in the Application, irrespective of whether the claim(s) remain under examination in the Application, is presented, with an appropriate defined status identifier.

**Status of the Claims**

Claims 3, 4 and 18 have been amended.

Claims 19-36 have been allowed. The Examiner has indicated that Claims 3 and 14-16 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 1-36 are now pending.

**Allowable Subject Matter**

On page 5 of the Office Action, the Examiner objected to Claims 3 and 14-16 as being dependent upon a rejected base claim, but indicated that Claims 3 and 14-16 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Accordingly, Claim 3 has been rewritten in independent form to include all of the limitations of base Claim 1 and intervening Claim 2. Claims 4 and 18 have been amended to depend from amended Claim 3. Claims 4-18 depend from amended Claim 3.

**Claim Rejections – 35 U.S.C. § 103(a)**

**Claims 1-2, 4-10 and 17-18**

On page 2 of the Office Action, the Examiner rejected Claims 1-2, 4-10 and 17-18 as being obvious over U.S. Patent No. 6,792,360 titled “Harmonic Activity Locator” to Smulders et al. (“Smulders ‘360”) in view of U.S. Patent No. 6,208,944 titled “Method for Determining

and Displaying Spectra for Vibration Signals” to Franke et al. (“Franke ‘944”) under 35 U.S.C. § 103(a).

The Examiner stated that:

Regarding claim 1, Smulders discloses a method for determining vibration amplitude to detect faults in mechanical equipment (systems and methods for detecting the development or presence of defects, or other impactive forces, in the components of a machine by analysis of the frequency spectrum of the vibrations of the machine, see: col. 1, lines 14-17); comprising:

estimating a data for the mechanical equipment (comprises a vibration sensor 112 estimating the most likely component defect fundamental frequency and its harmonics, and estimating the spectral energy related to these frequencies; the method further comprises estimating the energy associated with the frequency spectrum of the machine, see: col. 3, lines 37-42, Smulders further teaches data acquisition module 110 comprises a vibration sensor 112 that is coupled to the machine 120 to detect vibrations of the machine 120); and utilizing the data to calculate the vibration amplitude limits (Smulders discloses the data analyzer module 136 consists of one or more software/hardware or firmware components for analyzing the vibration data of the machine 120 to identify a defect in a component of the machine 120. The data analyzer module 136 comprises a harmonic activity locator index generator 138 (“index generator 138”) that analyzes the vibration data (i.e., the frequency spectrum of the machine 120) to produce a value indicative of the presence of a component defect, see: col. 5, lines 53-61).

However, the Examiner acknowledged that Smulders ‘360 does not “specifically disclose or suggest probability distribution.”

The Examiner stated that Franke ‘944 discloses “a pattern dictating a sequence or a probability distribution of parts of the frequency bands which are to be measured directly one after the other.”

The Examiner concluded that:

It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in [Smulders ‘360] the techniques of [Franke ‘944] as taught above because a plurality of individual measurement signals which have been detected one after

the other chronologically are thus provided for each measurement process and for the chronological sequence of sampling of vibration signals to be detected on one channel or more than one channel to be carried out in accordance with a predetermined pattern in order to calculate and display individual Fourier-transformed spectral parts in a reliable manner.

Smulders '360 is directed to a method of calculating limits for vibration amplitudes using the total energy of a defective machine (M) and dividing this number by the number of lines in the spectrum. The total energy of a spectrum is the sum of all the amplitudes of the spectrum, and dividing it by the number of spectral lines gives the average spectral energy (see col. 3, lines 20-60). As the Examiner acknowledged, Smulders '360 does not “specifically disclose or suggest probability distribution.”

Franke '944 is directed to a method for obtaining a composite vibration spectrum using different sampling frequencies (see col. 3, lines 13-60). Franke '944 does not utilize data probability distribution to calculate vibration amplitude limits.

Claim 1 is in independent form and recites a “method for determining vibration amplitude limits to detect faults in mechanical equipment” comprising, in combination with other steps, “utilizing the data probability distribution to calculate the vibration amplitude limits.” Claim 2 depends from independent Claim 1. Claim 3 has been rewritten in independent form and Claims 4-10 and 17-18 now depend from independent Claim 3.

The “method for determining vibration amplitude limits to detect faults in mechanical equipment” recited in independent Claim 1 would not have been obvious in view of Smulders '360, alone or in any proper combination with Franke '944 under 35 U.S.C. § 103(a). Smulders '360 alone or in any proper combination with Franke '944 does not disclose, teach or suggest a “method for determining vibration amplitude limits to detect faults in mechanical equipment” comprising, in combination with other steps, “utilizing the data probability distribution to calculate the vibration amplitude limits.” To transform the “Harmonic Activity Locator” of Smulders '360 and the “Method for Determining and Displaying Spectra for Vibration Signals” of Franke '944 into a “method for determining vibration amplitude limits to

detect faults in mechanical equipment” (as recited in Claim 1) would require still further modification, and such modification is taught only by the Applicants’ own disclosure.

The “method for determining vibration amplitude limits to detect faults in mechanical equipment” recited in independent Claim 1, considered as a whole, would not have been obvious in view of Smulders ‘360 and/or Franke ‘944. The rejection of Claim 1 over Smulders ‘360 in view of Franke ‘944 under 35 U.S.C. § 103(a) is improper. Therefore, Claim 1 is patentable over Smulders ‘360 in view of Franke ‘944.

Dependent Claim 2, which depends from independent Claim 1, is also patentable. See 35 U.S.C. § 112 ¶ 4. Claims 4-10 and 17-19 depend from independent Claim 3.

The Applicants respectfully request withdrawal of the rejection of Claims 1-2, 4-10 and 17-18 under 35 U.S.C. § 103(a).

#### **Claims 11-13**

On page 4 of the Office Action, the Examiner rejected Claims 11-13 as being obvious over U.S. Patent No. 6,792,360 titled “Harmonic Activity Locator” to Smulders et al. (“Smulders ‘360”) in view of U.S. Patent No. 6,208,944 titled “Method for Determining and Displaying Spectra for Vibration Signals” to Franke et al. (“Franke ‘944”) and further in view of U.S. Patent No. 6,138,045 titled “Method and System for the Segmentation and Classification of Lesions” to Kupinski et al. (“Kupinski ‘045”) under 35 U.S.C. § 103(a).

Claim 3 has been rewritten in independent form to include all of the limitations of base Claim 1 and intervening Claim 2 and is believed to be allowable as indicated by the Examiner. Dependent Claims 11-13, which depend from independent Claim 3, are also believed to be patentable. See 35 U.S.C. § 112 ¶ 4.

The Applicants respectfully request withdrawal of the rejection of Claims 11-13 under 35 U.S.C. § 103(a).

The Applicants believe that the present Application is now in condition for allowance. Favorable reconsideration of the Application as amended is respectfully requested.

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The Applicants respectfully submit that each and every outstanding objection and rejection has been overcome, and the present Application is in a condition for allowance. The Applicants request reconsideration and allowance of pending Claims 1-36.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present Application.

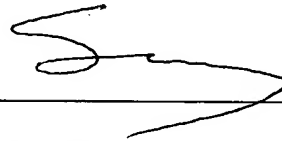
The Commissioner is hereby authorized to charge any additional fees which may be required regarding this Application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account 06-1447. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to the Deposit Account No. 06-1447. If any extensions of time are needed for timely acceptance of papers submitted herewith, the Applicants hereby petition for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extension fees to Deposit Account No. 06-1447.

Respectfully submitted,

Date

6/3/05

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